

## **The Mason-Dixon Line and Delaware Arc**

Maryland was to be granted to Cecil Calvert, the second Lord Baltimore, in 1632, Pennsylvania to William Penn in 1681, and Penn obtained what is now Delaware in 1682. Disputes over the boundaries between the Calvert and Penn lands began almost as soon as Pennsylvania was chartered. The quarrel outlived the original proprietors by decades, and a final, undisputed decision concerning the Calvert-Penn boundaries was not made until 1760.

Charles Mason and Jeremiah Dixon, skilled in astronomy, mathematics, and surveying, were engaged by the Penns and Calverts to complete the work of marking the border between Pennsylvania and the Three Lower Counties (Delaware) and Maryland. The southern border of what is now Delaware had been surveyed along a Transpeninsular Line from the Atlantic to the line's Middle Point, but local surveyors had had difficulties in surveying the next portion, the Tangent Line, which was to extend from the Transpeninsular Middle Point north to the Tangent Point with the 12-mile Arc around New Castle. (The Arc enclosed lands that Charles II had granted to the Duke of York and later became part of New Castle Co.)

Mason and Dixon were to survey the remaining unmarked sections of the border: the Tangent Line, the Arc Line (a small section of the 12-mile Arc that was found to lie west of the North Line), the North Line (the border due north from the Tangent Point), and finally the West Line. The West Line was to run along a line of latitude located 15 miles south of Philadelphia's southernmost point and extend 5 degrees of longitude west from the Delaware River, but the West Line only formed the border between Pennsylvania and Maryland beginning at its intersection with the North Line. Collectively, these lines constitute the Mason-Dixon Line, and the painstaking survey that marked it was one of the great technological feats of the 18th century. Only later, in the next century, when slavery increasingly divided the nation and the Mason-Dixon Line now separated Pennsylvania, where slavery had been gradually abolished, from Maryland, where it had not, would the Line come to symbolize the border between free and slave states.

The commissioners overseeing Mason and Dixon determined that the southernmost point in Philadelphia was the north wall of a house at what would now be 30 South Street (except that the spot is now beside a walkway over I-95), and the surveyors

determined that location's latitude. Going 15 miles due south from there would have put Mason and Dixon across the Delaware River in New Jersey, so they moved some 31 miles west to the farm of John Harlan in Chester County, which stands today on Route 162 outside Embreeville, Pa. (The same general area had been used in the 1730s in surveying a temporary Pennsylvania-Maryland border.) Using state-of-the-art equipment that included a precision clock (chronometer) and the famous zenith sector telescope, they determined their new location's latitude (a little south of the latitude of the house wall in Philadelphia, and established a reference point there, marked by the Stargazers' Stone.

After completing this work in the spring of 1764, they measured, using survey chains and levels, south to a point 15 miles below the latitude they had determined in Philadelphia, a spot now in Delaware. They marked this latitude reference point with the "Post mark'd West" (now memorialized by a stone monument in White Clay Creek State Park). The surveyors were accompanied by a team of axmen who cleared a "visto," or line of sight, eight to nine yards wide, along the line they surveyed.

The survey team used the remaining months of 1764 to clear a visto for and survey the Tangent Line, beginning at the Transpeninsular Middle Point. Surveying an extremely straight reference line by using astronomical sightings to determine their direction, they reached the area of the Tangent Point (82 miles north by north-northwest) and found the 12-mile marker post set earlier by local surveyors. They then used that straight line, a second reference line they surveyed, and mathematical computations to determine the offsets required to mark the Tangent Line.

In 1765 Mason and Dixon began their survey of the West Line from the Post mark'd West, reaching the Susquehanna River in May. They then returned east to survey the North Line due north from the Tangent Point to its intersection with the West Line, a location now marked by the Tri-State Marker (on the southern boundary of Pennsylvania's White Clay Creek Preserve). Because due north from the Tangent Point slices through the 12-mile Arc, a small section of the Delaware-Maryland border immediately north of the Tangent Point known as the Arc Line follows that Arc before the border runs due north.

After reporting to the survey commissioners in June, Mason and Dixon resumed surveying the West Line from the Susquehanna, reaching South Mountain and, in

late October, North Mountain, where they halted for the year. In 1766 the resumed survey reached a point near the Eastern Continental Divide. Late that year, the team measured the West Line east from the Post mark'd West to the Delaware River, determining that distance, without which they could not determine the 5 degrees of longitude that defined the western extent of Pennsylvania.

Completing the survey of the West Line the full 5 degrees now depended on the cooperation of the Six Nations (Haudenosaunee or Iroquois Confederacy), because King George III's Proclamation of 1763 had restricted colonial settlement and travel west of the Eastern Continental Divide. After negotiations, the survey resumed in June 1767 from near Cumberland, Md., and now included a Native American escort party. In August, they passed the western end of Maryland's border; the subsequent surveying marked the boundary between Pennsylvania and Virginia (now West Virginia). In late 1767, after the Mohawks accompanying the surveyors demanded that the survey end because it had reached as far as had been agreed with the Six Nations, Mason and Dixon ended their work not quite 233.25 miles from the Post mark'd West, some 19 miles short of the full 5 degrees of longitude.

Mason and Dixon had proposed to the Royal Society that they measure a degree of longitude and, later, a degree of latitude. The Society did not fund the measurement of the degree of longitude, but it did fund their measurement in the first half of 1768 of a degree of latitude. That measurement was the first such to be made in North America, and they also calculated the length of a degree of longitude along the West Line. In August of 1768, Mason and Dixon delivered copies of a map of their boundary survey to the survey commissioners, and their work was complete.

Their survey did not determine the border between Pennsylvania and Delaware, most of which is defined by the 12-mile Arc. The Arc was first surveyed in 1701 by colonial surveyors Isaac Taylor and Thomas Pierson, who were overseen by the magistrates of Chester County and New Castle County, and it was decided to use the "End of the Horse Dike next ye sd Town of New Castle" to establish the 12-mile radius. However, in 1750 (finalized 1760), the New Castle courthouse was chosen as the point from which the 12-mile radius to the Tangent Point would be surveyed. The difference in the two locations led to complications that were not resolved for more than 150 years.

The North Line runs west of the Arc for most of the section north of the Tangent Point, and the area between it and the Arc forms a roughly triangular area that became known as the Wedge. The Wedge was claimed by both Pennsylvania and Delaware, but residents of the Wedge paid taxes to Delaware and voted for representatives to its legislature. In 1849–1850, as a result of the loss of the Mason-Dixon marker at the northeast corner of Maryland (now the site of the Tri-State Marker), a tristate commission undertook to reestablish it. Lt. Col. James Graham of the U.S. Topographical Engineers was employed to oversee the work. Though it was not specified as part of his or the tristate commission's task, he determined that the Wedge should belong to Pennsylvania. He also used the courthouse, rather than the location used in 1701, to define the southwest section of the Arc. Delaware did not ratify his work, but subsequent maps in the 1800s typically assigned the Wedge to Pennsylvania.

In 1892, a Pennsylvania-Delaware commission was charged with resurveying the 12-mile Arc, and Captain W. C. Hodgkins of the U.S. Coast and Geodetic Survey led the surveyors. The trees that had been marked by the surveyors in 1701 were no longer in existence or identifiable, and it had become unclear precisely where the boundary was. The northern portion of the Arc was reconstructed on the basis of a handful of agreed-on markers associated with the 1701 survey. The survey of its western section – where such points could not be agreed on – followed Graham in using the courthouse to determine the point where an extension of the West Line (the top of the Wedge) intersected the Arc, a point now known as the Arc Corner. This choice required that the section of the Arc in the west be drawn so as to connect the Arc Corner with the west end of the northern section. As a result, two different arcs, one in the north, the other in the west, came to define the curved portion of the Pennsylvania-Delaware boundary, and only one point, the Arc Corner, is as close as 12 miles to the courthouse.

The new survey also established a roughly 4,000-foot-long eastern extension of the West Line as the extreme western border of Pennsylvania and Delaware. The Wedge, which was south of that extension, was assigned to Delaware, and the Horn, which was north of that extension and west of the western section of the Arc, was assigned to Pennsylvania. The intersection of this line with the Arc is marked by the Arc Corner Monument (on the boundary between the White Clay Creek Preserve and Delaware's White Clay Creek State Park).

The completed boundary survey was approved by legislators in Harrisburg, but it was challenged in the Pennsylvania courts by an unhappy resident of the Horn. The judge ruled that the commission, which had been tasked with resurveying the 1701 Arc, had exceeded its authority and created a new boundary in the western portion of the Arc. The new boundary required a compact between the two states to be established. The compact was ratified in Harrisburg in 1897, but legislators in Dover did not do so until 1921. In June of that year the compact was ratified by Congress, and the Pennsylvania-Delaware boundary dispute was finally settled.

*Franklin Township Historical Commission  
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